

International Experiences and Denmark's Opportunity

Parliament speech on bill L-132
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- I am an internationally-recognized expert in electronic elections, software engineering of critical systems, information security, and logic. I have ten years experience in electronic elections across four countries.
- Virtually all public experts like myself are highly critical of the introduction of technology in elections, both in polling booth for supervised elections, and for remote elections over the telephone or internet.
- I believe that technology does have a role to play in elections, but only to solve specific problems, and only if said systems are developed in a public, open, transparent fashion where correctness and security are first principles. We call this methodology Trust-by-Design within DemTech.

- Elections must have public control. This means that (1) the general public must understand and trust the electoral apparatus and (2) if IT is introduced into the election, it must be developed in a public, open, and transparent fashion.
- Corporations in electronic voting are universally against public, open, and transparent IT systems. Their main argument for being proprietary, closed, and opaque is for the sake of security.
- This is a false claim. Public, open, and transparent IT systems are the cornerstone of secure online systems, including virtually all online commerce, secure data transfers, email, etc.

- Election IT systems must be correct and secure. This means that they must be developed according to the highest levels of international standards in correctness and security.
- No corporate, and very few academic election systems, are developed against such standards.
- My group is one of the few in the world that does such election systems engineering.

- “Hacktivists” like myself analyze corporate and academic electronic elections hardware and software for correctness and security flaws.
- All systems we have analyzed have egregious, fundamental correctness and security flaws that make them unfit for use in local or national elections. Moreover, their architectures are typically so flawed that they cannot be “fixed”.
- Only systems developed from scratch with the right principles (public, open, and transparent development and have correctness and security as mandatory requirements) and technologies have a chance at being fit for local and national elections.

- Some academic experts in election systems create demonstration IT systems as case studies in new mathematics, security, and engineering techniques.
- These systems are also created to show governments and corporations that engineering election systems to the highest international correctness and security standards is possible.
- In my research group we have created, or are currently working on, several such systems. Our focus is on processing voter lists, tallying ballots, rigorously validating tally systems, and a supervised VVPAT ballot printer and tally system.

- Denmark has an opportunity to learn from others' mistakes and wisely use IT for democracy.
- I recommend that the Ministry amend L-132 based upon the criticisms and suggestions of IT and election experts.
- In particular, trials must be scientifically conducted by independent agents, international IT standards of quality and security must be mandated, and all IT systems must be developed in a public, open, and transparent fashion, preferably using a process akin to DemTech's Trust-by-Design methodology.

- I recommend that computers are used for election management: the creation and maintenance of voter lists, generation of ballots and voter cards, polling lists, and reporting results.
- I recommend that computers are used to tally ballots, so long as risk-limiting post-election audits are used.
- I recommend that only the disabled use supervised kiosk-based electronic voting systems to independently and cast traditional secret ballots.

- I recommend that ballot design is changed, through the introduction of an explicit box where a voter can mark their vote, to decrease the number of spoiled ballots.
- I recommend that computers should be used to analyze and optimize existing manual election procedures to increase accuracy and security, and decrease the cost, of current elections.
- I recommend that manual tallying of ballots is done via an optimized sorting process followed by a weighing, rather than counting, sorted ballot piles.